EOSDIS Maintenance and Development Project

Training Material for the EMD Project Volume 10: Archive Processing

Revision --

July 2007

Raytheon Company Upper Marlboro, Maryland

Training Material for the EMD Project Volume 10: Archive Processing

Revision --

July 2007

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EOSDIS Maintenance and Development Project

Date July 30, 2007

RESPONSIBLE OFFICE

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Date

EOSDIS Maintenance and Development Project

Raytheon Company

Upper Marlboro, Maryland

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Preface

This document is a formal contract deliverable. It requires Government review and approval within 45 business days. Changes to this document will be made by document change notice (DCN) or by complete revision.

Any questions should be addressed to:

Data Management Office The EMD Project Office Raytheon Company 1616 McCormick Drive Upper Marlboro, Maryland 20774-5301

Revision History

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Abstract

This is Volume 10 of a series of lessons containing the training material for the Earth Observing System Data and Information System (EOSDIS) Maintenance and Development (EMD) Project. This lesson provides a detailed description of the process required to perform the tasks associated with archive functions.

Keywords: training, instructional design, course objective, archive, AAWin, granule deletion tool, Spatial Subscription Server, Data Pool, Data Pool maintenance, Release 7.20

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Abstract

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Introduction

Identification

Training Material Volume 10 is part of Contract Data Requirements List (CDRL) Item 23, which is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Maintenance and Development (EMD) Contract (NAS5-03098).

Scope

Training Material Volume 10 describes the process and procedures associated with Archive Processing. It describes archive hardware, software, and data. In addition, it addresses starting and shutting down the tape archive control software, monitoring archive requests, and performing archive management tasks. This lesson is designed to provide the operations staff with sufficient knowledge and information to satisfy all lesson objectives.

Purpose

The purpose of this Student Guide is to provide a detailed course of instruction that forms the basis for understanding data archiving. Lesson objectives are developed and will be used to guide the flow of instruction for this lesson. The lesson objectives will serve as the basis for verifying that all lesson topics are contained within this Student Guide and slide presentation material.

Status and Schedule

This lesson module provides detailed information about training for the current baseline of the system. Revisions are submitted as needed.

Organization

This document is organized as follows:

Introduction: The Introduction presents the document identification, scope,

purpose, and organization.

Related Documentation: Related Documentation identifies parent, applicable and

information documents associated with this document.

Student Guide: The Student Guide identifies the core elements of this lesson. All

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Lesson Objectives and associated topics are included. Slide Presentation is reserved for all slides used by the instructor during

the presentation of this lesson.

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Related Documentation

Parent Documents

The parent documents are the documents from which the EMD Training Material's scope and content are derived.

423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work
423-46-03	EMD Task 101 Statement of Work For ECS SDPS Maintenance
423-46-02	Contract Data Requirements Document for EMD Task 101 ECS SDPS Maintenance

Applicable Documents

The following documents are referenced within this EMD Training Material, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document:

420-05-03	Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS) (ECS F&PRS)
423-46-01	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS) Science Data Processing System (EMD F&PRS)

Information Documents

Information Documents Referenced

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of the EMD Training Material.

609-EMD-100	Release 7.20 Operations Tools Manual for the EMD Project
611-EMD-100	Release 7.20 Mission Operation Procedures for the EMD Project

Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify or clarify the information presented in this document. These documents are not binding on the content of the EMD Training Material.

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305-EMD-100	Release 7.20 Segment/Design Specification for the EMD Project	

311-EMD-100	Release 7.20 INGEST (INS) Database Design and Schema Specifications for the EMD Project
311-EMD-101	Release 7.20 Science Data Server Database Design and Schema Specifications for the EMD Project
311-EMD-102	Release 7.20 Storage Management Subsystems Database Design and Database Schema Specifications for the EMD Project
311-EMD-103	Release 7.20 Systems Management Subsystem Database Design and Schema Specifications for the EMD Project
311-EMD-104	Release 7.20 Order Manager Database Design and Database Schema Specifications for the EMD Project
311-EMD-105	Release 7.20 Spatial Subscription Server (SSS) Database Design and Schema Specifications for the EMD Project
311-EMD-106	Release 7.20 Data Pool Database Design and Schema Specifications for the EMD Project

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Archive Processing Overview

Lesson Overview

This lesson reviews the process of archiving data, including a description of processing for working with the File Storage Management System (FSMS) software, monitoring the ingest/archiving/distribution performance, managing archive content and capacity, maintaining configuration of peripherals and data servers, backing up and restoring archived data, documenting and troubleshooting archive errors, maintaining the archive processing queue (storage and retrieval), and providing archive status.

Lesson Objectives

Overall Objective - The overall objective of this lesson is proficiency in the methodology and procedures for archive processing in the Earth Observing System Data and Information System (EOSDIS) Core System (ECS) during maintenance and operations. The lesson includes a description of processing for monitoring the ingest/archival/distribution performance, maintaining configuration of peripherals and data servers, documenting archive errors, maintaining the archive processing queue (both storing and retrieval), managing archive content and capacity, submitting new data archive requests to the Science Coordinator, and providing archive status.

Specific Objective 1 - The student will list DAAC operator positions for Archive Manager personnel interfaces and identify responsibilities associated with each interface.

Condition - The student will be given a list of DAAC operators.

Standard - The student will select four personnel positions with which the Archive Manager interfaces and list at least one major area of responsibility for each selected position.

Specific Objective 2 - The student will identify the major hardware facility for archival storage and its associated storage cartridges.

Condition - The student will be given a copy 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, a working system archive facility, a 9940 tape cartridge, and a 9840 tape cartridge.

Standard - The student will correctly point out the StorageTek Library Storage Module (LSM) and its associated 9940 and 9840 tape cartridges.

Specific Objective 3 - The student will describe the File Storage Management System (FSMS) software.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project.

Standard - The student will identify the FSMS software as the StorNext, correctly describe StorNext by stating its nature as a UNIX file system installed on an SGI XL computer, and state the five steps in the StorNext control path without error.

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Specific Objective 4 - The student will start the StorNext tape archive system.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will operate the StorNext control panels, power up the archive hardware, and then boot StorNext host and start StorNext without error and in accordance with documented procedures.

Specific Objective 5 - The student will shut down the StorNext tape archive system.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will terminate StorNext and shut down the LSM without error and in accordance with documented procedures.

Specific Objective 6 - The student will use manual mode to enter the LSM.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will vary the LSM offline, enter the LSM, leave the LSM, and vary the LSM back online, without error, in accordance with documented procedures, and following all required safety precautions.

Specific Objective 7 - The student will describe the relationships between Earth Science Data Types (ESDTs), Logical Volume Groups (LVGs) in the Archive, and physical archive volume groups.

Condition - The student will be given a diagram depicting the relationships.

Standard - The student will correctly explain the logical and physical structure of archive storage for the system.

Specific Objective 8 - The student will describe the process of, and monitor the progress of, inserting new data into the archive.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will describe without error the process of inserting new data into the archive.

Standard - The student will perform without error and in accordance with documented procedures the procedures relating to monitoring retrieval of data from the archive.

Specific Objective 9 - The student will use the granule deletion capability to delete granules from the archive and inventory.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will perform without error and in accordance with documented procedures the procedure for deleting granules from the archive and inventory.

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Specific Objective 10 - The student will perform automatic and manual loading of archive storage cartridges.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, a working system archive facility with StorNext started, and 9940 tape cartridges, and 9840 tape cartridges.

Standard - The student will perform procedures for automatic and manual loading of the proper cartridges for the LSM without error and in accordance with documented procedures.

Specific Objective 11 - The student will create a backup for archived data.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will correctly and in accordance with documented procedures perform a backup of archived data.

Specific Objective 12 - The student will replace a full Backup Volume.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started..

Standard - The student will perform without error and in accordance with documented procedures the procedures for replacing the Backup Volume (Volume 1).

Specific Objective 13 - The student will manually create a replacement backup for an archive data tape.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility with StorNext started.

Standard - The student will perform without error and in accordance with documented procedures the procedures for manually creating a replacement backup for an archive data tape.

Specific Objective 14 - The student will "restore" archive data by inserting a backup copy cartridge.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will perform without error the procedure for inserting a backup copy cartridge to replace a lost archive data tape.

Specific Objective 15 - The student will to display what is in the StorNext queue.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will perform without error and in accordance with documented procedures the procedure for viewing what is in the StorNext queue.

Specific Objective 16 - The student will display StorNext messages from the system log file.

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will perform without error and in accordance with documented procedures the procedure for using the *amass_log* script to display AMASS messages from the system log file.

Specific Objective 17 - The student will launch and use the StorNext Graphical User Interface (GUI).

Condition - The student will be given a copy of 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will successfully start the StorNext GUI, display icons and data for volume groups and volumes, and execute procedures for modifying volume groups and volumes without error and in accordance with documented procedures.

Specific Objective 18 - The student will perform the functions required to maintain the Data Pool, including tasks with the Data Pool Maintenance (DPM) GUI (monitor Data Pool active insert processes; monitor/cancel data pool insert actions; suspend and resume Data Pool actions; check the Data Pool insert queue; toggle the state of the NoFreeSpace flag; configure the number of allowed active insert processes; configure the default retention period and the default retention priority; view and update collection groups in the Data Pool database; list/add/delete a theme), tasks with utilities and scripts (extend the period of retention for selected science granules already in the Data Pool; set up a schedule and cron job for Data Pool cleanup; manually invoke Data Pool cleanup; set up a schedule and cron job for Data Pool access statistics accumulation; manually invoke the Data Pool access statistics utility), and tasks with the Spatial Subscription Server (NBSRV) GUI (extend the period of retention in a Data Pool insert subscription; update a subscription; view/add/cancel a bundling order; view statistics on processing of events and actions by the Spatial Subscription Server).

Condition - The student will be given a copy 609-EMD-100, Release 7.20 Operations Tools Manual for the EMD Project, and a copy of 611-EMD-100, Release 7.20 Mission Operation Procedures for the EMD Project, and a working system archive facility.

Standard - The student will use the GUI tools, scripts, and utilities without error in accordance with applicable procedures to perform the required Data Pool maintenance functions.

Importance

The Archive Manager's role in maintaining the archive data is key to the successful implementation and operation of the system. Ensuring the smooth operation of the archive is crucial for system core functionality.

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Slide Presentation

Slide Presentation Description

The following slide presentation represents the slides used by the instructor during the conduct of this lesson.

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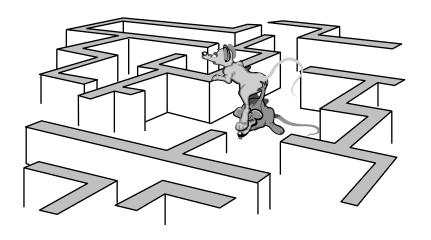


Archive Processing

July 2007

Overview of Lesson

- Introduction
- Archive Processing Topics
 - Archive Hardware and Software
 - Delete Granules
 - Data Pool Management and Maintenance



Objectives

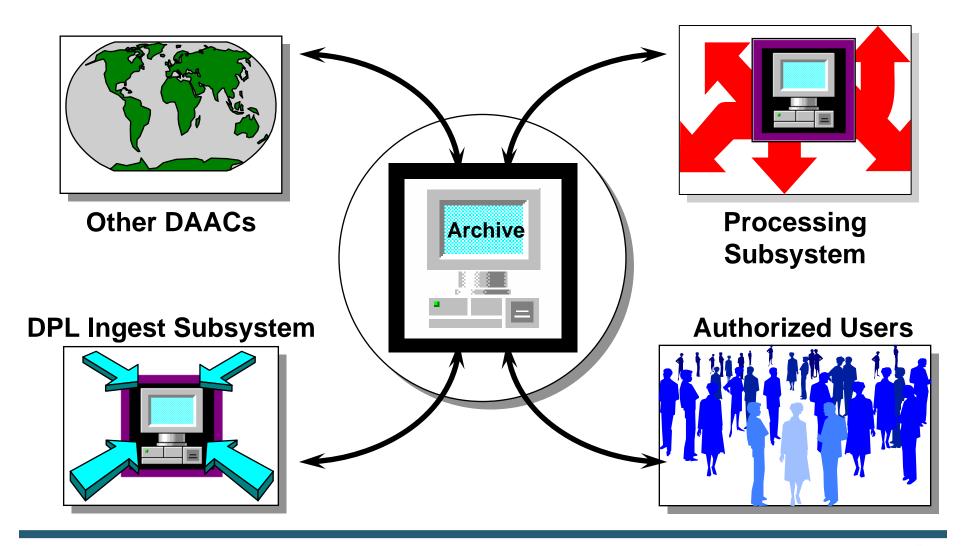
- Overall: Proficiency in Archive Processing
 - Describe Archive Manager roles and responsibilities
 - Identify and describe Archive storage resources
 - Describe archive storage element relationships and archive resource management
 - Use Granule Deletion tool to delete granules
 - Delete files from the archive
- Overall: Proficiency in Archive Processing (Cont.)
 - Use GUIs, utilities, and scripts for Data Pool maintenance

Objectives (Cont.)

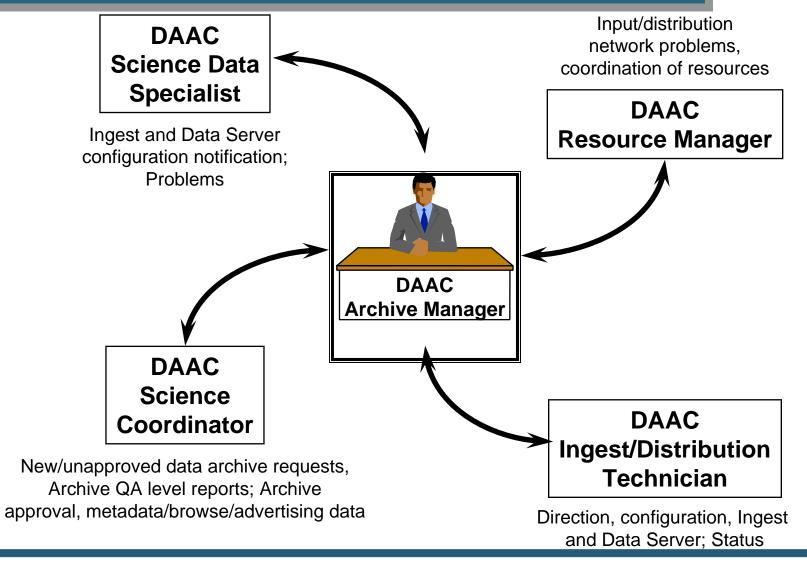
• STANDARDS:

- Lesson content (procedures in the lesson)
- Mission Operation Procedures for the EMD Project (611-EMD-001)

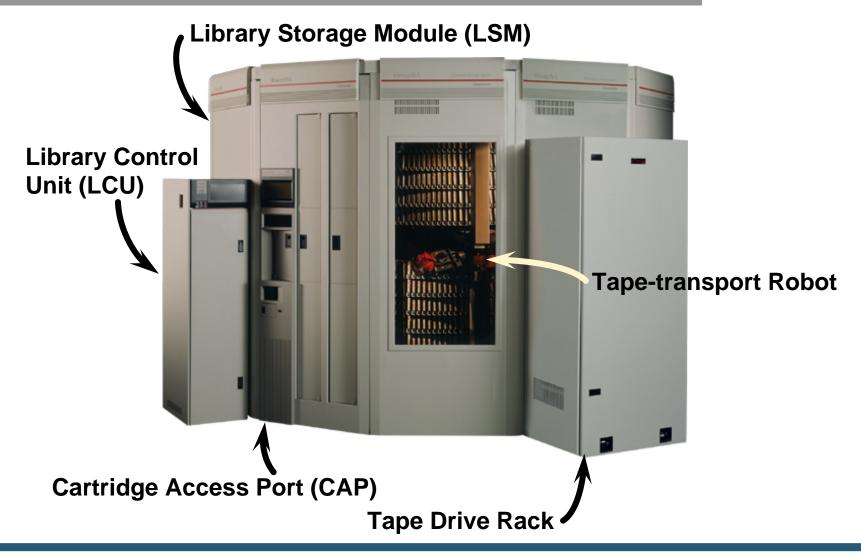
Sources and Uses of Archive Data



DAAC Archive Manager Interfaces



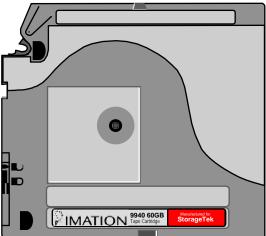
STK Powderhorn Data Storage



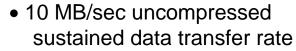
STK 9940 Tape System



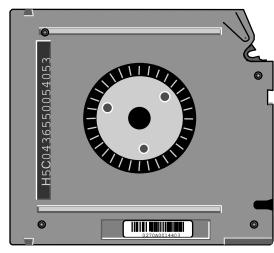
9940 Tape Drives







- 60 GB capacity per cartridge (uncompressed)
- 10-sec load time
- 50-sec search/access



End View with Barcode

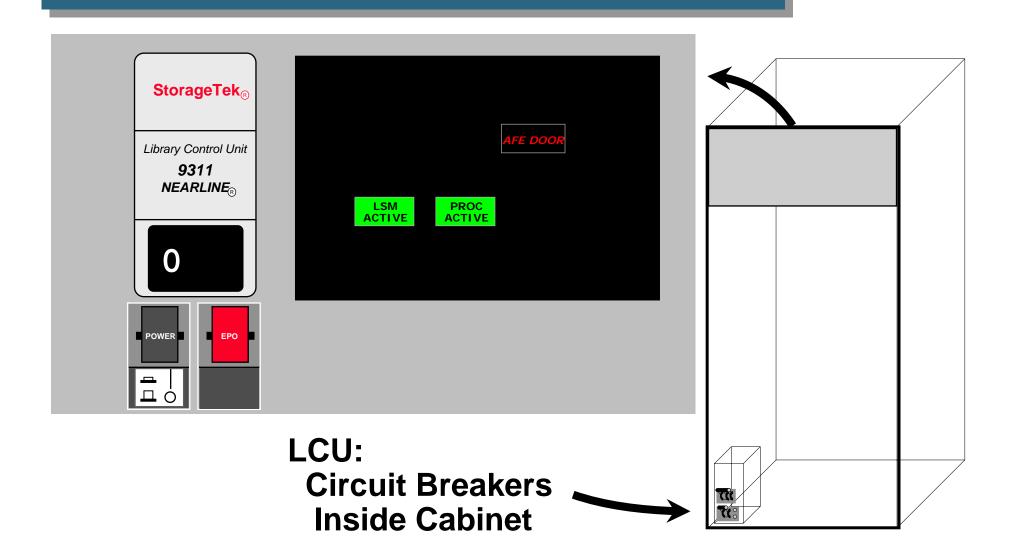
Automated Cartridge System Library Software (ACSLS)

Command	Function
Audit	Creates or updates the database inventory of the volumes in a library component.
Cancel	Cancels a current or pending request.
clear lock	Removes all active and pending locks on transports or volumes.
Dismount	Dismounts a volume.
Eject	Ejects one or more volumes from the Automated Cartridge System (ACS).
Enter	Sets a Cartridge Access Port (CAP) to enter mode.
Idle	Stops ACSLS from processing new requests.
Lock	Locks (dedicates) a volume or transport to a user.
Logoff	Exits the command processor.
Mount	Mounts a data or scratch volume.
Query	Displays the status of a library component.
Set	Sets various attributes of different library components.
Show	Displays your lock ID or user ID.
Start	Starts ACSLS request processing.
Unlock	Removes active locks on volumes or transports.
Vary	Changes the state of an ACS, LSM, CAP, transport, or port.
Venter	Enters one or more volumes with missing or unreadable labels into the ACS.

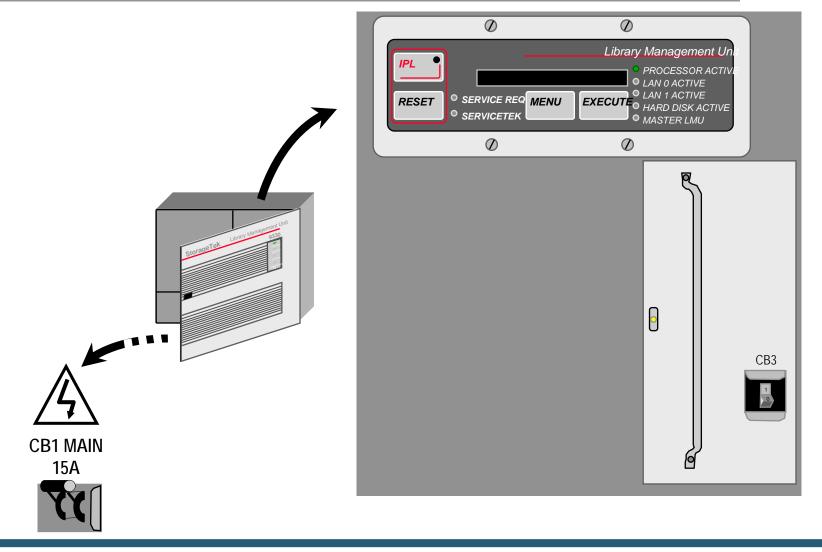
Automated Cartridge System Library Software (ACSLS) (Cont.)

- General Command Syntax:
 - command type_identifier state [options]
- Frequently used commands:
 - query, vary, enter, eject
- Utilities:
 - bdb.acsss -- back up the ACSLS database
 - kill.acsss -- terminate ACSLS
 - rc.acsss -- start and recover ACSLS
 - rdb.acsss -- restore the ACSLS database
 - db_command -- start/stop ACSLS database
- User Ids:
 - acssa -- enter commands
 - acsss -- run utilities from UNIX

STK Controls/Displays: LCU



STK Controls/Displays: LMU



STK Controls/Displays: LSM



StorNext Application

- Archive operations rely on both custom and commercial off the shelf (COTS) software for complete mass storage archive management, providing the capability to accept Graphical User Interface (GUI) and command line interface inputs, and to interpret them to the appropriate level needed to control and monitor archive operations. The StorNext Storage Manager (SNSM) software is a product of Quantum. Quantum, which acquired ADIC, is the vendor for both the StorNext File System and the StorNext Storage Management products.
- The purpose of SNSM in the system is to provide an easy-to-use interface to a large tape archive. StorNext manages files, volumes (media), drives and jukeboxes. It allows UNIX File System (UFS) access methods to be employed (e.g., ftp, rcp, uucp, nfs, RPC, cp, mv and native commands) while removing some of the limitations of the UFS. Primary among these is reliance on UNIX Index Node (inode) structures. StorNext maintains all inode information in database files rather than in associated disk structures. This minimizes or eliminates many of the file search problems inherent in searching large numbers of files in multiple directories.

StorNext Application

Starting and Stopping StorNext

- The ECS System contains both managed (Hericharchal Storage Manager) and unmanaged StorNext File Systems. In order for the ECS System to function properly you need to start/stop both. They can be started/stopped from the Linux command line or from the GUI provided by the vendor.
- To start StorNext Manager Server (this must be started first) from the command line prompt: (as superuser or root)
- Logon to the active metadata server (x4smvaa). Using x4smvaa will log you into the active (x4sml01 (primary) or x4sml02 (failover/secondary)
- # /etc/init.d/cvfs start
- Verify that the StorNext Manager Server is active with the command
- #ps –ef | grep cvfs
- To start StorNext Manager Clients from the command line prompt: (as superuser or root)
- 3 Logon to the each client hosts.
- # /etc/init.d/cvfs start
- 4 Verify that the StorNext Manager Server is active with the command
- #ps –ef | grep cvfs

StorNext Application

To start StorNext Manager Server (this must be started first) from the command line prompt: (as superuser or root)

 Logon to the active metadata server (x4smvaa). Using x4smvaa will log you into the active (x4sml01 (primary) or x4sml02 (failover/secondary)

/etc/init.d/cvfs start

Verify that the StorNext Manager Server is active with the command

#ps -ef | grep cvfs

To start StorNext Manager Clients from the command line prompt: (as superuser or root)

Logon to the each client hosts.

/etc/init.d/cvfs start

Verify that the StorNext Manager Server is active with the command

#ps -ef | grep cvfs

StorNext Application

- To bring the StorNext System, you must stop both the server and and its clients. The Clients must all be stopped first.
- To Stop the StorNext Clients
 - Log in as root (system administrator) into each StorNext Metadata Client.

/etc/init.d/cvfs stop

Check to ensure client has been stopped

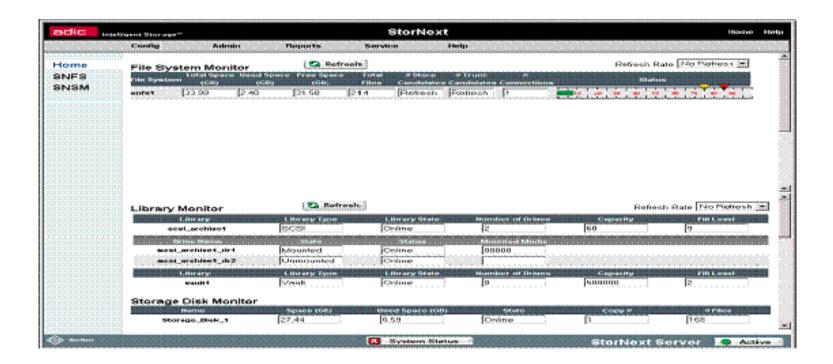
#ps -ef | grep cvfs

(NOTE: MAKE SURE THAT ALL CLIENTS ARE STOPPED)

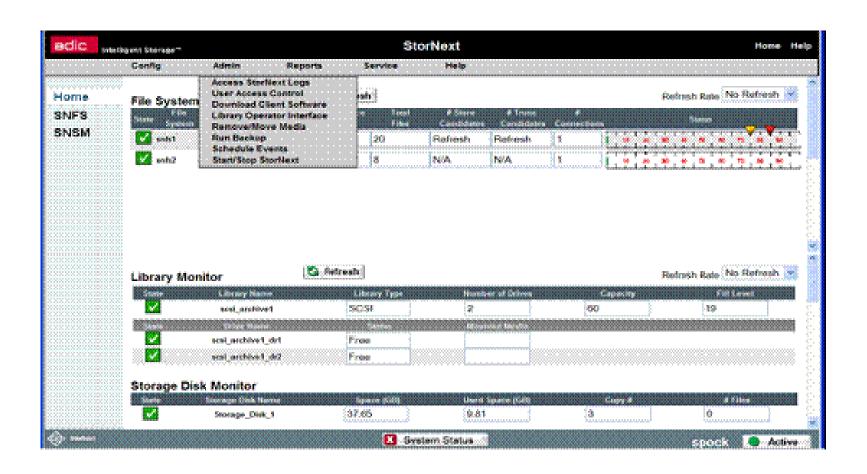
- To Stop the StorNext Server
 - Log in as root (system administrator) into the active StorNext Metadata Server (x4smvaa).
 - To stop StorNext Server, type:
 - #/etc/init.d/cvfs stop
 - Check to ensure server has been stopped
 - #ps -ef | grep cvfs

StorNext GUI Home Page

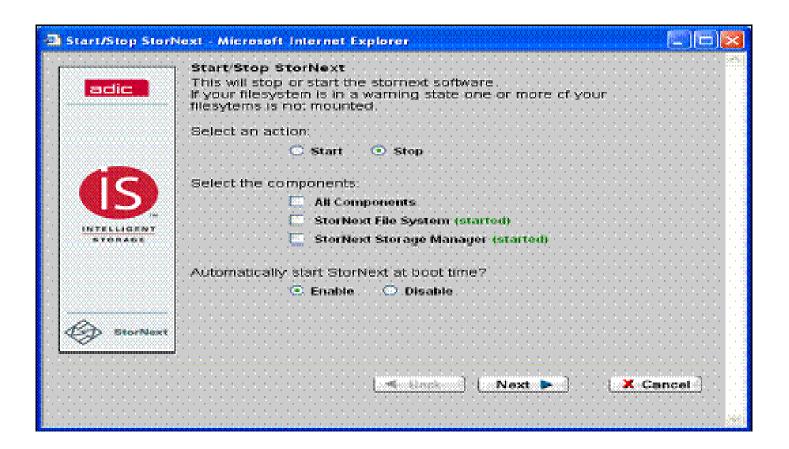
 The StorNext Home GUI is Web based, and can be accessed by any Web enabled machines with the proper Java libraries. To start the StorNext Manager and its Clients from the GUI:



StorNext GUI Admin Drop Down



StorNext Stop/Start GUI



Granule Deletion

Phases of Granule Deletion

- Logical deletion [marking granules (in the SDSRV database) for deletion]
- Physical deletion (removing from the SDSRV database data concerning granules marked for deletion and putting in the STMGT database data concerning granules to be deleted from the archive)
- Deletion from the archive (removing from the archive the files identified for deletion in the STMGT database)

Granule Deletion (Cont.)

- Phase 1, Logical Deletion
 - For the first phase, a command-line Bulk Delete utility (EcDsBulkDelete.pl) responds to operator-specified criteria for the deletion of granules by "logically" deleting from the inventory (SDSRV database) those granules that meet the criteria
- Phase 2, Physical Deletion
 - Physical deletion occurs when the operations staff runs the Science Data Server Deletion Cleanup utility (EcDsDeletionCleanup.pl), which removes all inventory rows (in the SDSRV database) for granules that were flagged as "deleted," including rows referencing related information (e.g., BR, PH, and QA); the script creates entries in the DsStPendingDelete table (in the STMGT database) for granules to be deleted
- Phase 3, Deletion from the Archive
 - The operator uses the Archive Batch Delete utility to initiate the removal from the archive of the files listed in the DsStPendingDelete table (populated by SDSRV in Phase 2); the operator must run the utility separately on each appropriate Archive host (FSMS Server or APC Server host)

Loading/Removing Archive Media

- STK Powderhorn: Cartridge Access Port (CAP)
 - 21 Tapes
- Automatic loading (recommended for most loading)
- Manual loading (available for initial loading or other bulk loading)

Archive Backups

- Programmatic backups are part of design requirements
 - Active archive copy (use Archive ID -- ShortName and VersionID)
 - e.g., AST_L1B.001
 - Local backup storage copy (use Backup ID)
 - Append "B" -- e.g., AST_L1B.001B
 - Off-site backup storage copy (use Offsite ID)
 - Append "O" -- e.g., AST_L1B.001O
- Archive manager needs to create volume group for offsite backups, using StorNext GUI
- Selection of data for backup dependent on factors such as feasibility of recovery by other means (e.g., re-ingest, reprocess)
- Each site is responsible for arranging its own secure offsite storage

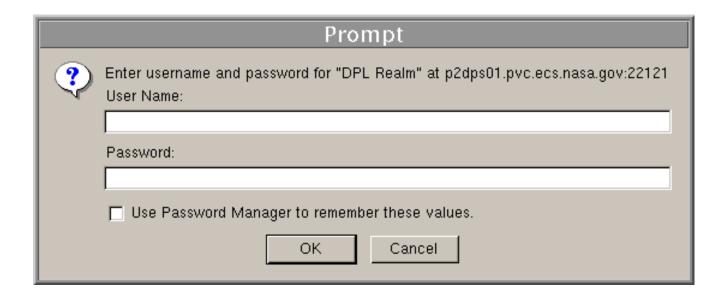
Data Pool Management

- Features of the Data Pool Maintenance GUI
 - Most Archive or support personnel tasks for monitoring and maintaining the Data Pool require the use of the Data Pool Maintenance (DPM) GUI
 - The DPM GUI permits an operator to perform tasks in the following general areas:
 - Monitoring Data Pool Active Insert Processes and Insert Actions
 - Managing Data Pool File Systems
 - Enabling/Disabling Data Compression
 - Managing Compression Algorithms
 - Managing Cloud Cover Information
 - Checking the Status of Batch Inserts
 - Checking the Data Pool Insert Queue

Data Pool Management (Cont.)

- Features of the Data Pool Maintenance GUI (Cont.)
 - The DPM GUI permits an operator to perform tasks in the following general areas (Cont.):
 - Managing Data Pool Configuration Parameters and Data Pool Tuning
 - Managing Data Pool Collection Groups
 - Managing Data Pool Collections within Collection Groups
 - Managing Themes

DPM GUI: Security Login Prompt



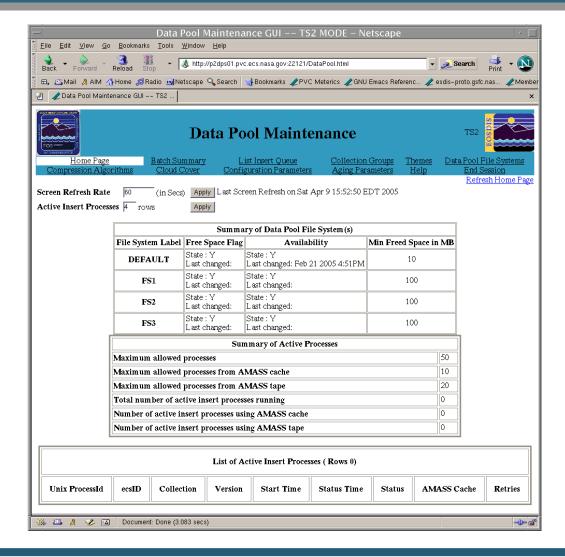
Data Pool Management (Cont.)

- Features of the Data Pool Maintenance GUI (Cont.)
 - Full-capability operators have the ability to configure parameters and perform all other actions that can be accomplished with the DPM GUI
 - Limited-capability operators are able to view a lot of information
 - However, on the limited-capability GUI some buttons and links have been disabled so it is not possible to perform certain actions or access certain pages

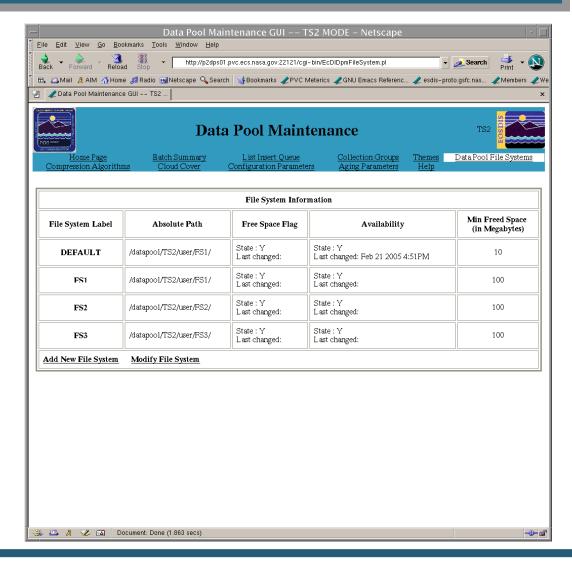
Data Pool Management (Cont.)

- Features of the Data Pool Maintenance GUI (Cont.)
 - This lesson provides instruction in the full-capability version of the DPM GUI
 - However, the functions that are available to limited-capability operators as well as the functions that are not available to limited-capability operators are identified

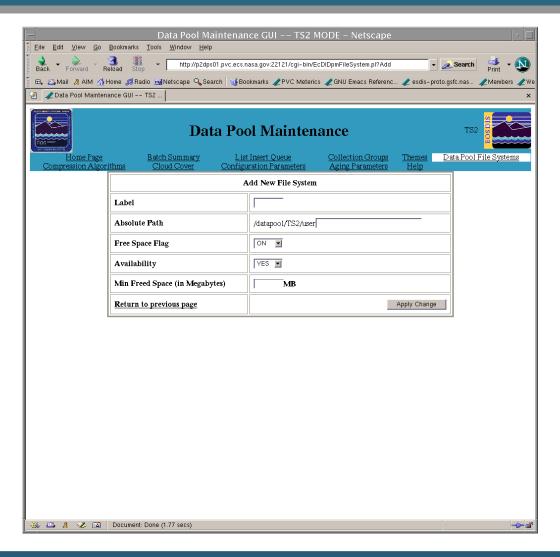
DPM GUI: Home Page



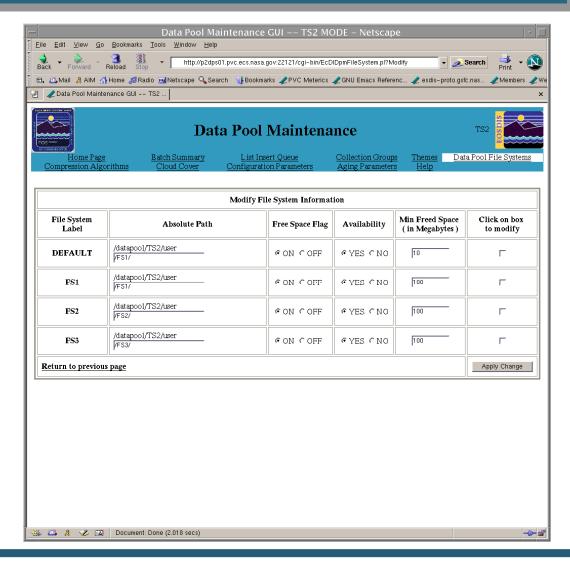
DPM GUI: File System Information Page



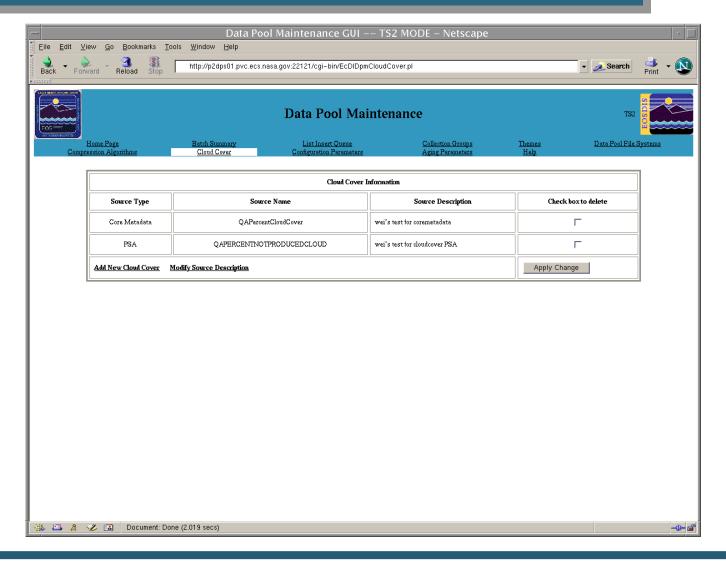
DPM GUI: Add New File System Page



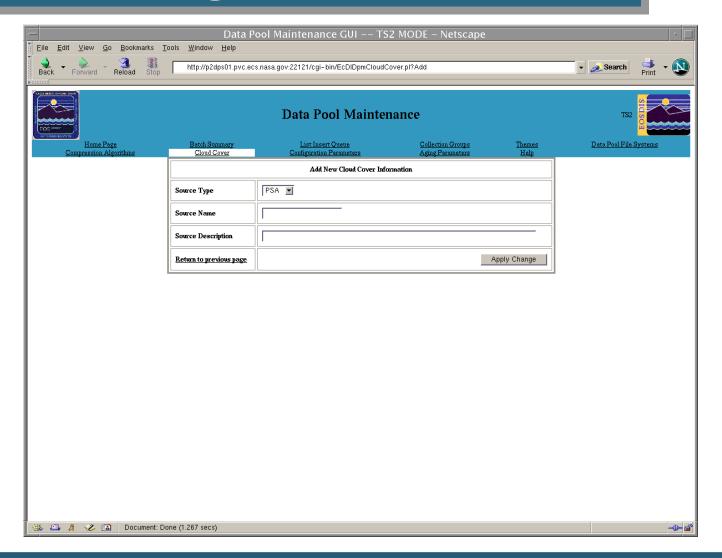
DPM GUI: Modify File System Information Page



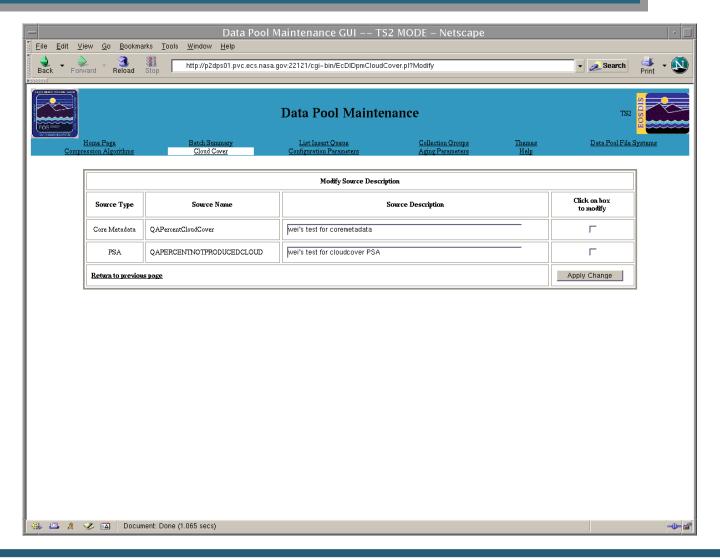
DPM GUI: Cloud Cover Information Page



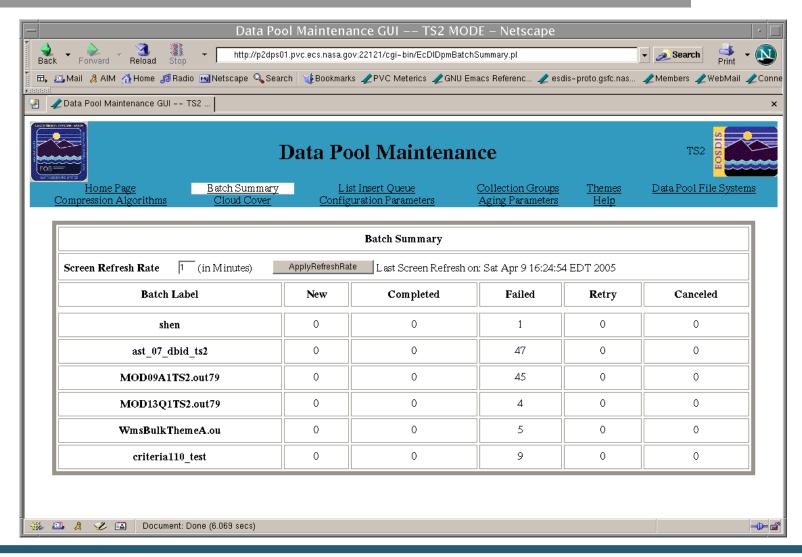
DPM GUI: Add New Cloud Cover Information Page



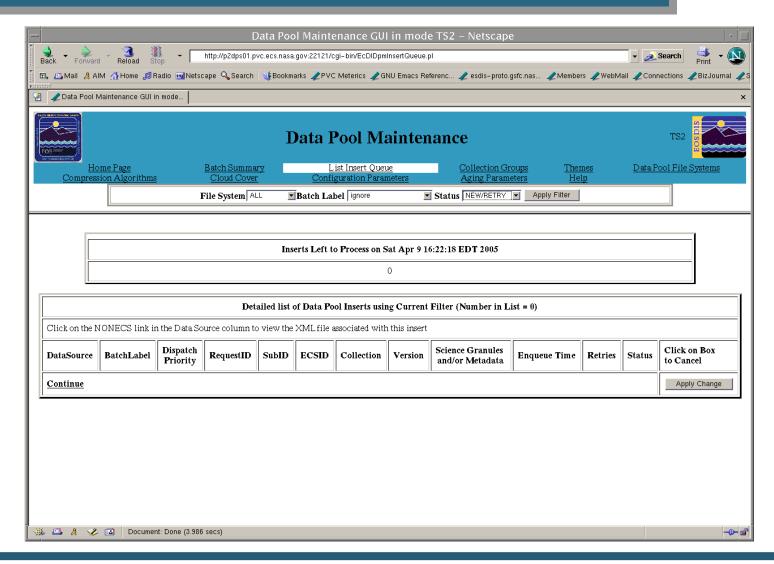
DPM GUI: Modify Source Description Page



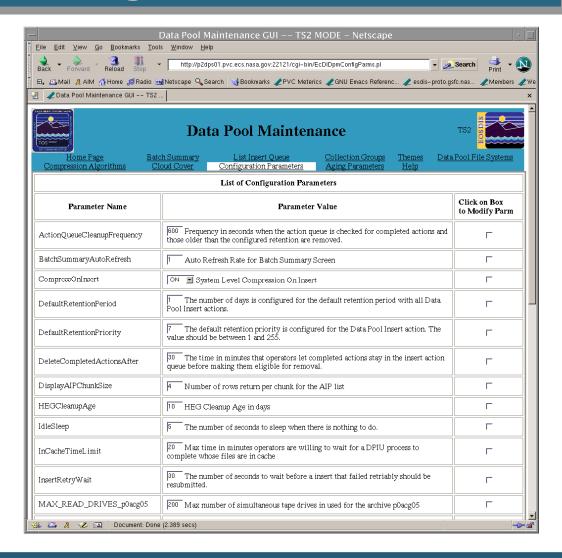
DPM GUI: Batch Summary Page



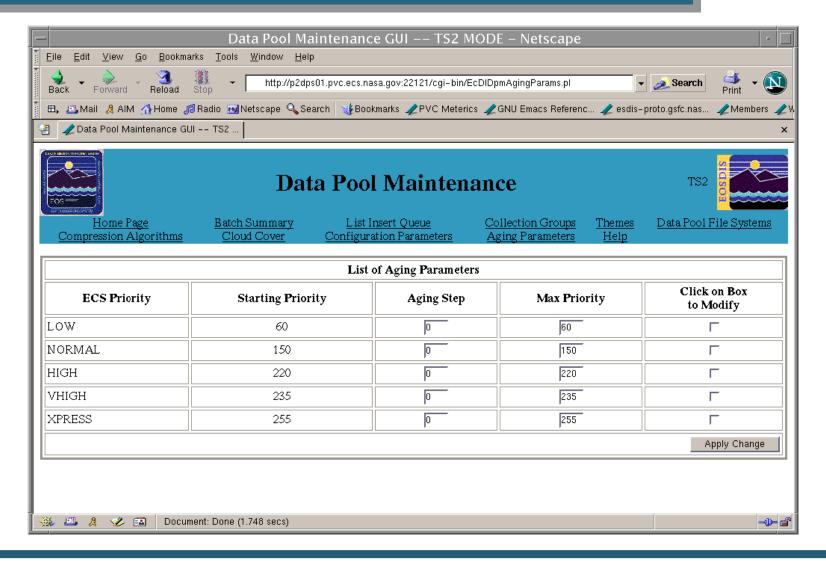
DPM GUI: List Insert Queue Page



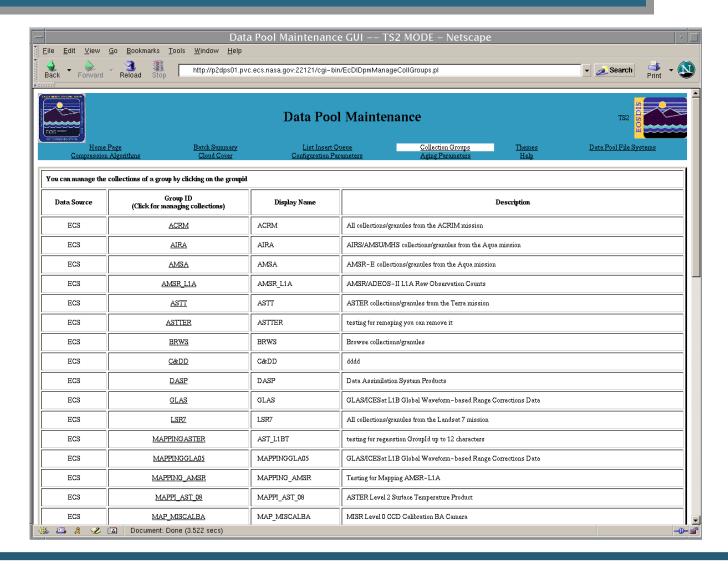
DPM GUI: List of Configuration Parameters Page



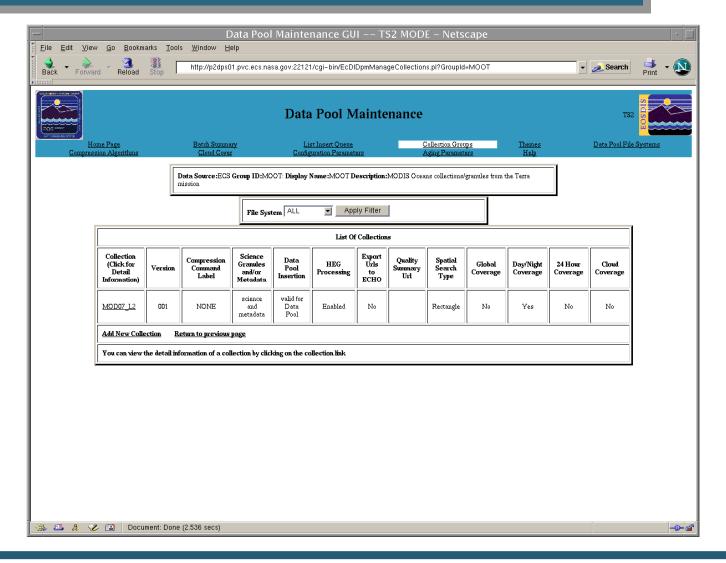
DPM GUI: Aging Parameters Page



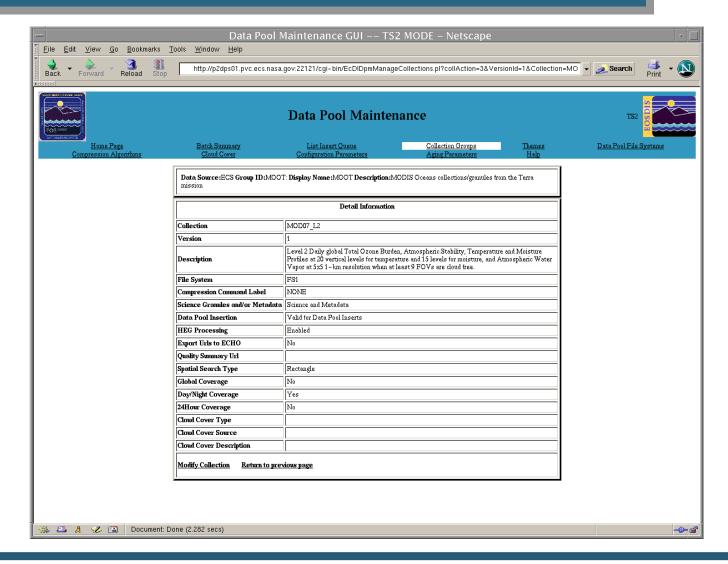
DPM GUI: Collection Groups Page



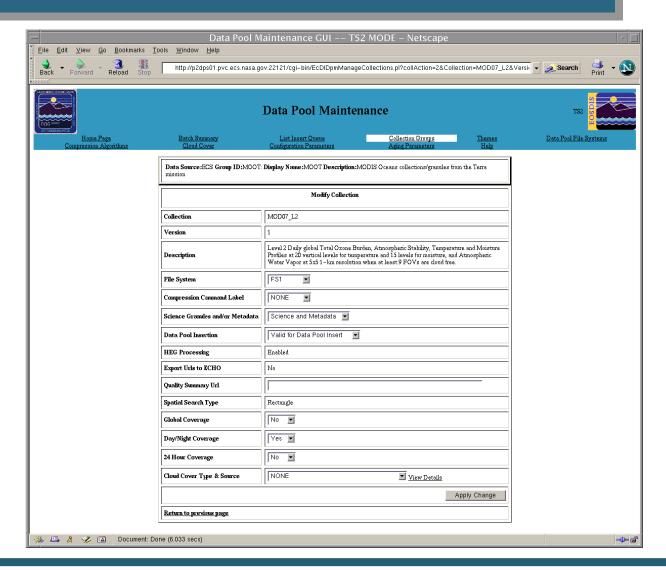
DPM GUI: Collection Group Detail Page



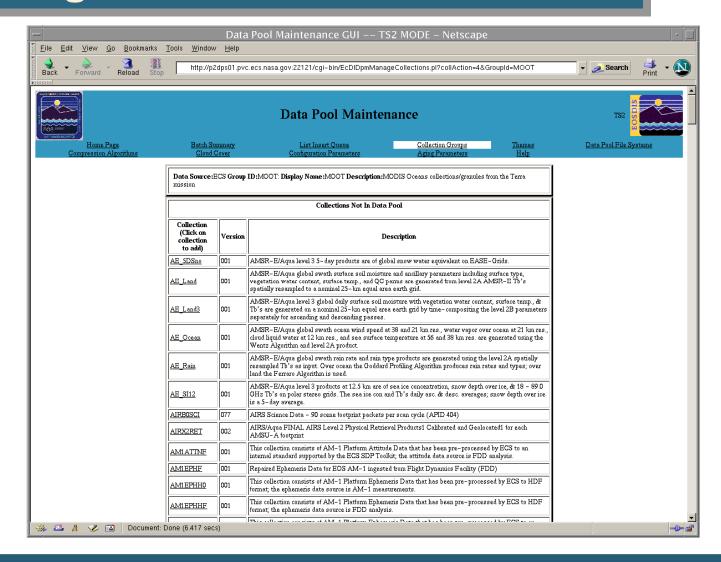
DPM GUI: ECS Collection Detail Page



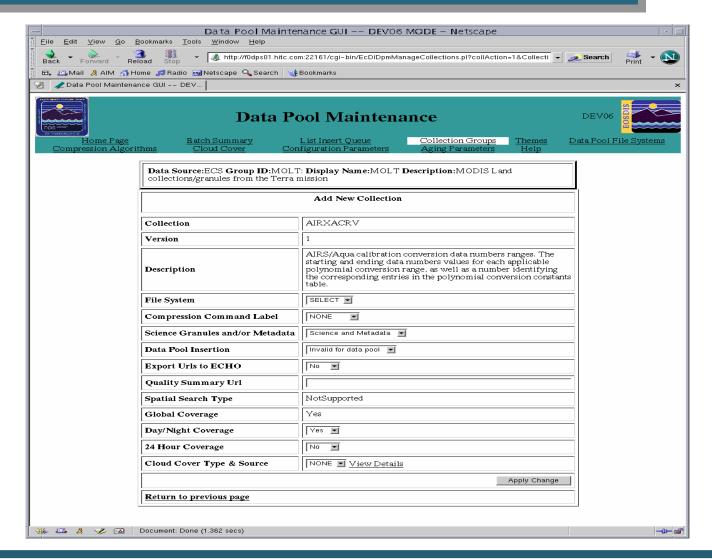
DPM GUI: Modify Collection Page



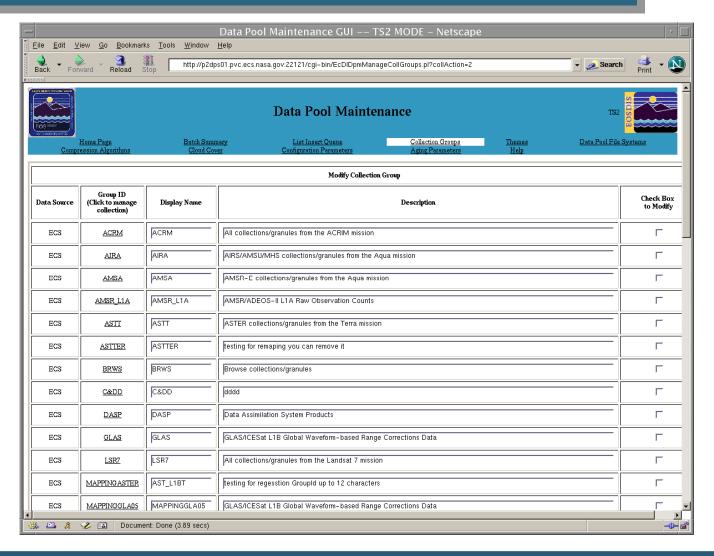
DPM GUI: Collections Not in Data Pool Page



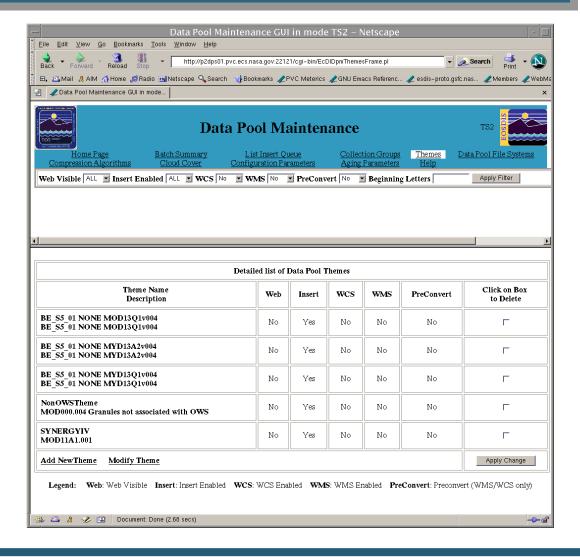
DPM GUI: Add New [ECS] Collection Page



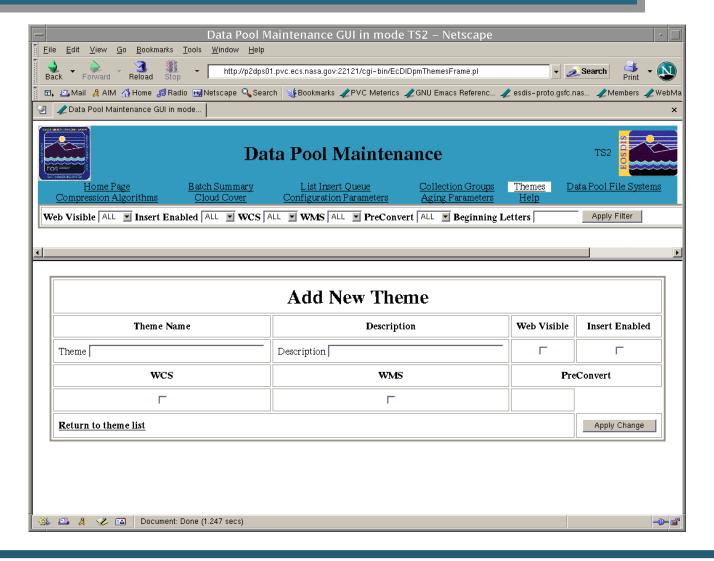
DPM GUI: Modify Collection Group Page



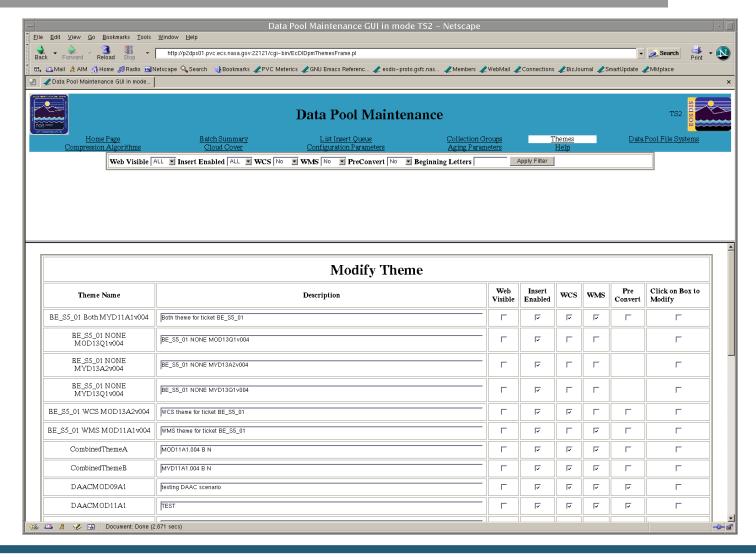
DPM GUI: Detailed List of Data Pool Themes Page



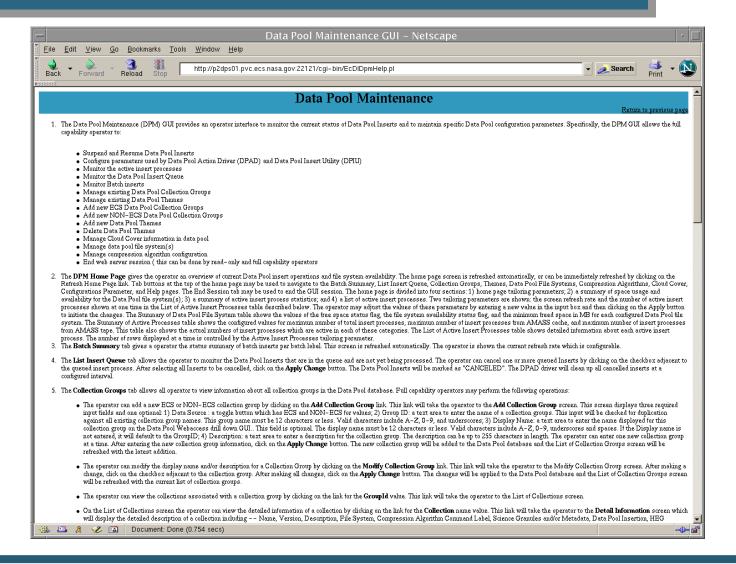
DPM GUI: Add New Theme Page



DPM GUI: Modify Theme Page



DPM GUI: Help Page



Number of Drivers to Run

- Recommended initial configuration
 - 3 event drivers
 - 3 action drivers
 - 1 recovery driver
 - 1 deletion driver
- EcNbDriverStart < MODE > de da dr dd
- Increase throughput by doubling number of event and action drivers (i.e., 6 each)
- isql query to identify a condition in which action processing lags behind event processing
 - select max(actionDateTime from EcNbActionQueueLog where actionStatus = 'Acquire' or actionStatus = 'ActionNotification'
 - if delay is an hour, try increasing number of action drivers to one and one-half times the number of event drivers (e.g., 6 event drivers and 9 action drivers)

DPM GUI User Messages

Message Text	Impact	Cause and Corrective Action
DB Error: You entered a duplicate collection group name that exists in the database. Please try again	Unable to add a new group id	Duplicate group name is entered. Check the list of group ids and enter a group name consisting of four letters, which is not on the list.
INPUT Error: You entered an invalid group name. Please see help page for more information. Please see section Add Collection Group	Unable to add a new group	Lower case letter is entered. Group id should be all Upper case letters.
INPUT Error: You entered an invalid name. Please see log for more details.	Unable to add a new non- ECS collection	Special characters/small letters are entered.
INPUT Error: You entered an invalid theme name. Please see help page for more information. Please see section: Add New Theme	Unable to add a new theme	Special characters/small letters are entered. Theme names should be in capital letters and without any special characters.
DB Error: Theme can not be null or empty	Unable to add a theme	A null or empty string is entered. Theme name should contain capital, small letters. Space is also allowed but no special characters.

DPM GUI User Messages (Cont.)

Message Text	Impact	Cause and Corrective Action
DB Error: You entered either an existing theme name or a collection or a group name or an ESDT name. Check the log at /usr/ecs/ <mode>/CUSTOM /log/EcDIDpmDataPoolGui. log for more details</mode>	Unable to add a theme	A name is entered, which is a duplicate name for a group, collection or an ESDT name.
DB Error: This collection is allowed for insertion	Unable to modify Spatial Search type for a collection	Collection is not allowed for insertion.
therefore Spatial Search Type cannot be modified for this collection		First make the collection allowed for insertion and then try to modify search type
DB Error: Error adding this collection. Collection entry	Unable to add a collection.	Duplicate collection name entered.
<collection name=""> <version> already exist</version></collection>		Verify the list of collection and then enter a name, which is unique.
DB Error: Internal error occurred	A db transaction interrupted.	Database connection is lost for network error.
		No suggestion.
DB Error: delete failed because there are granules associated with	Unable to delete a theme.	There are granules associated with this theme.
this theme		Disassociate granules from this theme and then delete it.

Data Pool Scripts

- Update Granule Utility
 - Updates granule retention period
 - Updates retention priority (optional)
- Data Pool Cleanup Utility
 - Removes expired granules from the Data Pool disks and inventory
- Data Pool Access Statistics Accumulation Utility
 - Derives statistics from event logs produced by the Data Pool FTP server and the Data Pool Web Access application
 - Statistics are written to a data base that can be used to produce tabular reports for loading/manipulation by a spreadsheet application program

Data Pool Scripts (Cont.)

- Data Pool Archive Access Statistics Data Utility
 - Archives the granule access data from the Data Pool database into a tab-delimited ASCII file
- Data Pool Delete Access Statistics Data Utility
 - Deletes granule access data in a specified time range from the Data Pool database
- Data Pool Restore Access Statistics Data Utility
 - Restores granule access data for a specific time range from an ASCII archive file to the Data Pool database
- Batch Insert Utility
 - Inserts ECS data that are already in the archive into the Data Pool

Data Pool Scripts (Cont.)

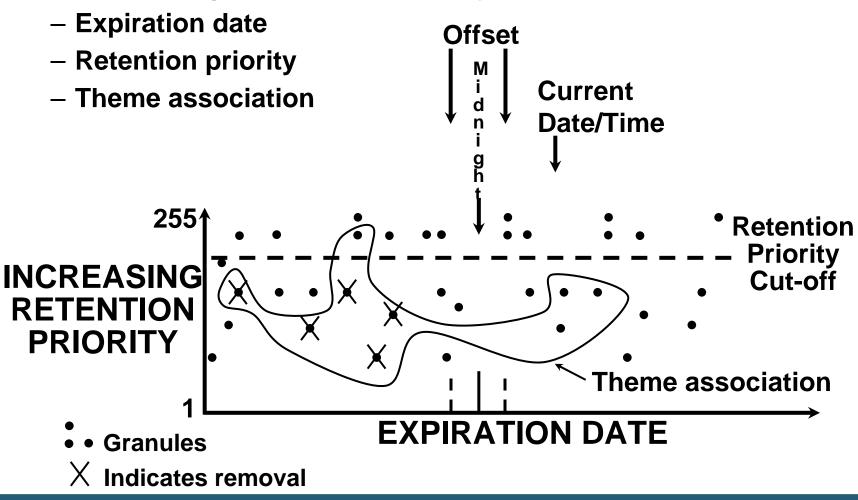
- Most Recent Data Pool Inserts Utility
 - Lists the most recent additions to the Data Pool
- Data Pool Collection-to-Group Remapping Utility
 - Reassigns a Data Pool collection to a collection group other than the one to which it was originally assigned
- Data Pool QA Update Utility
 - Updates the QA data for granules in the Data Pool inventory;
 both the inventory and the corresponding XML files on disk are updated
- Data Pool Move Collections Utility
 - Moves collections from one file system to another
- Data Pool Hidden Scrambler Utility
 - Makes the transition to or renames (with encrypted names)
 hidden directories for order-only granules in the Data Pool

Update Granule Utility

- Extend retention of data already in Data Pool
- Options
 - noprompt: Suppress prompts and detailed information
 - -theme: Specifies a valid theme name (i.e., a character string that matches an existing theme name in the Data Pool inventory)
- Run for a single granule with command-line input
 - grnid input parameter specifies granule information
- Run for multiple granules listed in input file
 - -file input parameter specifies the file use to provide granule data to the utility
- Run as background process, suppressing all warnings, error messages, prompts
- Connects to data base and uses Sybase stored procedures

Data Pool Cleanup Utility

Removal of granules that qualify for deletion



- Cleanup Utility acts on non-ECS data in the same way as on ECS data
- Cleanup Utility can remove granule cross references associated with a given theme, and also the granules if specified
 - themexref specifies a theme for which all cross references are to be removed from the Data Pool
 - theme specifies a theme for which associated granules are to be removed (a granule is not removed if it is associated with other themes)

- Cleanup Utility reports deletion candidates to ECHO
 - -echomode parameter specifies the method by which deletion candidates are reported to ECHO
 - echomode takes one of three values
 - predelete Cleanup Utility builds the list of items to clean up from the Data Pool and reports them to ECHO through the EcBmBulkURL utility; no data is actually cleaned up from the disks or database inventory
 - finishdelete Cleanup Utility deletes all of the data that was last found during a run with the predelete parameter; EcBmBulkURL utility is not invoked because this run performs the actual cleanup of the database inventory and disks of what was previously reported to ECHO
 - deleteall Cleanup Utility builds its list of items to clean up, actually cleans them up, and notifies ECHO via the EcBmBulkURL utility

- Normal sequence for cleanup is to run the Cleanup Utility twice
 - Specify predelete for the first run and finishdelete for the second run
 - If a predelete run is performed, the subsequent run must specify finishdelete in order to perform the actual deletions
 - Cleanup Utility enforces the requirement to avoid operator error
- Cleanup utility permits "validation"
 - Cleans up "phantoms" (inventory entries without Data Pool data) and "orphans" (Data Pool data without inventory entries)
 - Operator may specify logging discrepancies only, without removals

- Three types of runs can be performed with the Cleanup Utility:
 - Cleanup only
 - Validation only
 - Cleanup followed by validation
- In normal operations, the Cleanup Utility is run once a day as a cron job as a "cleanup only" run executing in echo mode of predelete
- On a subsequent run within the same 24-hour period, the cleanup utility is run in finishdelete mode to perform the actual cleanup processing that was reported to ECHO in the predelete mode

Data Pool Access Statistics Utility

- Processes logs of web access and FTP access and stores results in tables in the Data Pool database
- Two versions, each with configuration file
 - EcDIRollupWebLogs.pl (EcDIRollupWebLogs.CFG) processes web access logs
 - EcDIRollupFtpLogs.pl (EcDIRollupFtpLogs.CFG) processes SYSLOG for FTP entries
- Captured data are written to a flat file and exported to Sybase
- Associated shell scripts
 - DIDbArchiveAccessStat
 - DIDbDeleteAccessStat
 - DIDbRestoreAccessStat

Data Pool Batch Insert Utility

- Command-line utility allows insert of granules from the ECS archive or from outside ECS
 - Queues granules for Data Pool Action Dispatcher (DPAD) and insert by Data Pool Insert Utility (DPIU)
 - Batch label specified by -label option
 - Theme association specified by -theme option
 - Note: If -theme option is used to link granules resident in Data Pool to a theme, and the granules were originally inserted using the Batch Insert Utility, must use a different batch label from that used for original insert into Data Pool

Bulk Metadata Generation Tool (BMGT)

- Several ECS data collections are created maintained at each site to store the bulk metadata and bulk browse data
- Bulk Metadata Generator and Bulk Browse Generator Tools are run daily at each site to populate the data collections
 - One metadata product is created per ESDT group per day
 - Each product contains an external representation of the metadata for each new, updated, or deleted granule that is a member of the ESDT group
 - Format used for the external representation of the metadata is XML
 - One bulk browse product is produced per day that contains references to all new, updated, or deleted browse granules
 - Value-added providers may use any of the standard ECS search, order, and subscription capabilities to find and order these bulk metadata and browse products

Bulk Metadata Generation Tool (BMGT) (Cont.)

- ECS data collections for storing the bulk metadata and bulk browse data
 - The ECSMETC and ECSMETG data collections store products that contain metadata for multiple collections and multiple granules
 - ECSBBR collection stores products that contain browse product references
 - Has a custom acquire service that converts the browse product references into actual browse products during distribution
 - ECSMETV collection stores products that contain the entire set of valids contained within the SDSRV database for a particular instance in time
 - BMGT places XML products, .met and PDR files in a polling directory for Ingest pick up via the Science Investigator-Led Processing System (SIPS) interface
 - After successful archiving, the products are pushed to ECHO via SIPS interface

Bulk Metadata Generation Tool (BMGT) (Cont.)

 The distribution of bulk browse products is not a function of BMGT; it is managed by OMS

Data Pool Hidden Scrambler Utility

- Running the Data Pool Hidden Scrambler Utility in Rename Mode
 - The Data Pool Hidden Scrambler Utility (EcDIHiddenScrambler.pl) can be run in either of the following two modes:
 - Transition
 - Rename
 - In transition mode the utility generates hidden directory names and corresponding database entries for every collection defined for Data Pool in the affected operating mode
 - The transition mode can be used while Data Pool is up
 - The utility should be run in transition mode only once; i.e., the first time the utility is run in any given operating mode
 - Because transition mode is not used during normal operation, it is not described in any detail in this lesson

Data Pool Hidden Scrambler Utility (Cont.)

- Running the Data Pool Hidden Scrambler Utility in Rename Mode (Cont.)
 - In rename mode the utility renames all of the scrambled names to a new scrambled name
 - This involves updates to the directory in the file system and to the database
 - Links from the FtpPull area (and elsewhere) are preserved
 - Renaming is done during DAAC downtime only
 - If the Data Pool Hidden Scrambler Utility is interrupted during execution, upon restart it detects failures from the previous run and continues processing whatever was left unprocessed
 - The operator is given no choice as to recovery
 - Either recovery proceeds or the Data Pool inventory and disk files are in a corrupted state

Data Pool Hidden Scrambler Utility (Cont.)

 Running the Data Pool Hidden Scrambler Utility in Rename Mode (Cont.)

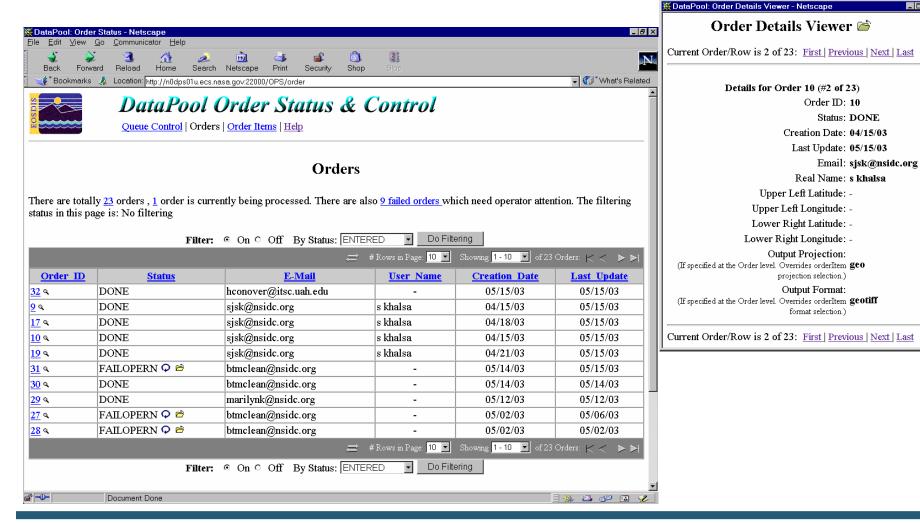
WARNING

The Data Pool Hidden Scrambler Utility should be run in transition mode only once; i.e., the first time the utility is run in any given operating mode. In normal operations, the Data Pool Hidden Scrambler Utility is run in rename mode.

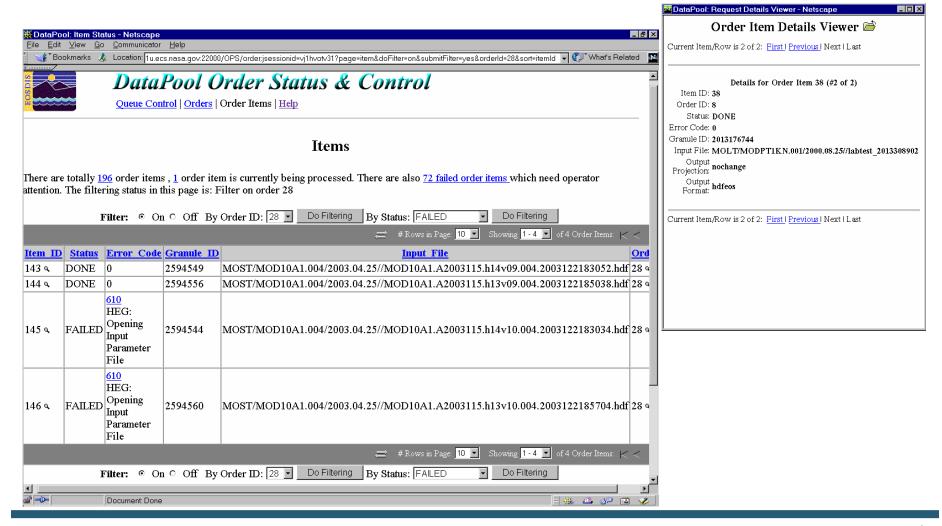
Data Pool Order Status & Control

- For orders place using the Data Pool Web Access tool or the single granule converter dialog for the HDF EOS -GeoTiff (HEG) Converter
- Allows operators to view the status of orders and order items
- Allows operators to control certain aspects of the order process
- Four functional areas:
 - Queue Control: Start and stop the HEG Converter Front End server
 - Orders: Reports the status of orders
 - Order Items: Reports the status of order items
 - Help: Provides information on the functions

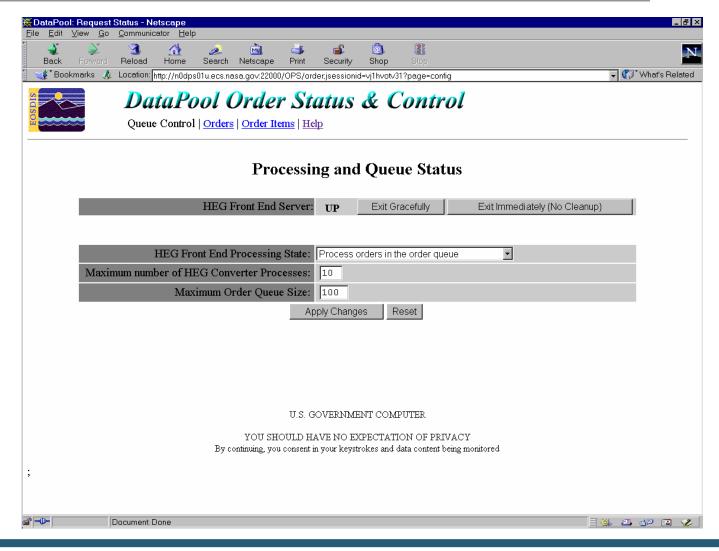
DataPool Order Status & Control: Orders Page and Order Details



DataPool Order Status & Control: Order Items Page and Item Details



DataPool Order Status & Control: Queue Control Page



- The Spatial Subscription Server (NBSRV) GUI provides a convenient means of modifying the period of retention in a Data Pool insert subscription and designating a subscription for secure distribution
 - This can be done by User Services and/or science personnel, but the archive support personnel should also be familiar with the GUI and its use
 - Other tasks done with the Spatial Subscription Server GUI may also be of use to archive personnel
 - For example, viewing the acquire and notification actions currently being processed by the Spatial Subscription Server and viewing statistics on the processing of events and actions by the Spatial Subscription Server

- The Spatial Subscription Server GUI permits an operator to perform the following kinds of activities:
 - View subscribable events
 - Review existing subscriptions in the Spatial Subscription Server (NBSRV) database
 - Add a subscription specifying Data Pool qualification and retention criteria, thus adding a subscription for Data Pool insert to the database
 - Create a standard subscription for notification and/or distribution of ECS data products
 - Designate a subscription for secure distribution

- The Spatial Subscription Server GUI permits an operator to perform the following kinds of activities (Cont.):
 - Extend the period of retention in a Data Pool insert subscription for new granules from a particular area
 - View the acquire and notification actions currently being processed by the Spatial Subscription Server
 - View statistics on the processing of events and actions by the Spatial Subscription Server

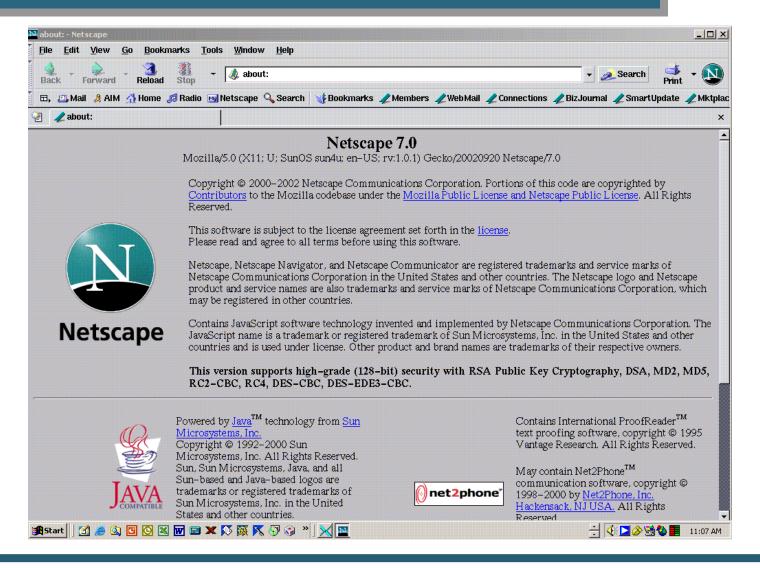
- New operator GUI security standards require the following two levels of permissions for the Spatial Subscription Server GUI:
 - Full Capability
 - Limited Capability
- An operator's level of permission is determined when the operator logs in to the GUI using the security login prompt

- Full-capability operators have the ability to configure parameters and perform all other actions that can be accomplished with the Spatial Subscription Server GUI
- Limited-capability operators are able to view a lot of information
 - However, on the limited-capability GUI some buttons and links have been disabled so it is not possible to perform certain actions or access certain pages

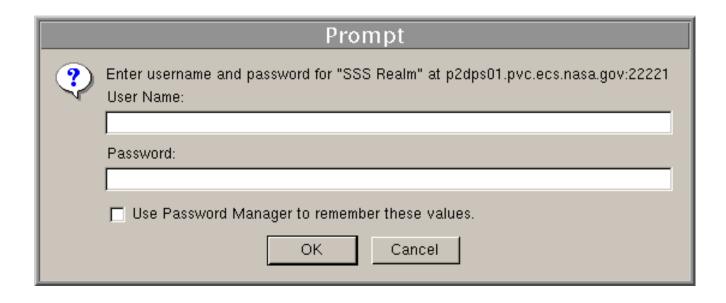
- This lesson provides instruction in the full-capability version of the Spatial Subscription Server GUI. In general, both full-capability operators and limited-capability operators can view the following items:
 - Subscribable events
 - Subscriptions
 - Bundling orders
 - Action queue
 - Statistics relating to Spatial Subscription Server performance

- Full-capability operators only may perform the actions:
 - Add, update, or delete (cancel) a subscription
 - Configure defaults for a bundling order
 - Add, update, or cancel a bundling order
- The Spatial Subscription Server GUI is a web application certified for use with Netscape 7 (and higher) browsers

Netscape Web Browser

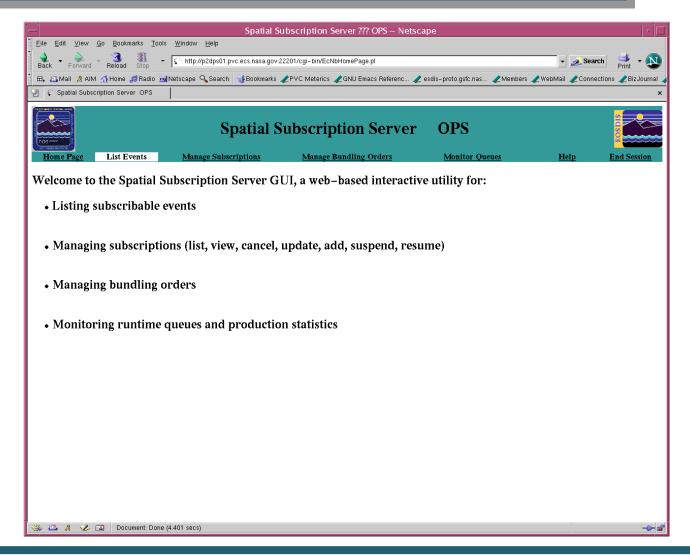


Security Login Prompt

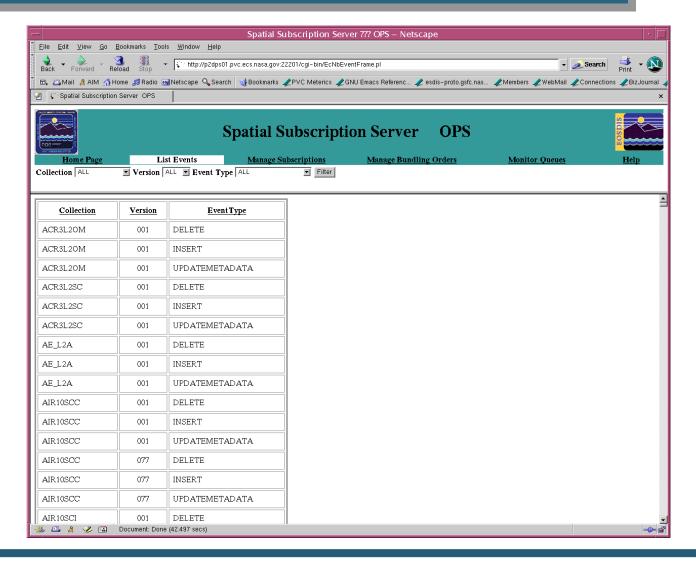


- The Spatial Subscription Server GUI Home Page provides four links for access to pages supporting various tasks:
 - List Events: access to pages for listing subscribable events
 - Manage Subscriptions: access to pages for managing subscriptions
 - Manage Bundling Orders: access to pages for managing bundling orders
 - Monitor Queues: access to pages for monitoring the action queue and listing statistics
- There is also a Help link providing descriptions of the Spatial Subscription Server functions to provide the operator with assistance in navigating through the GUI

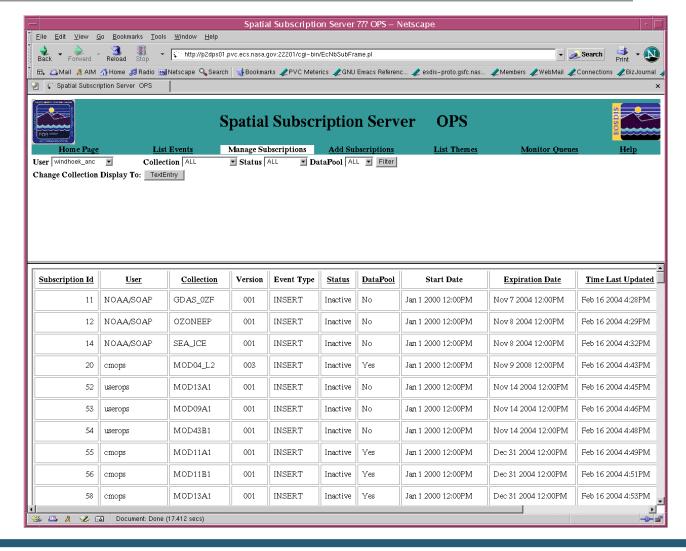
Spatial Subscription Server GUI Home Page



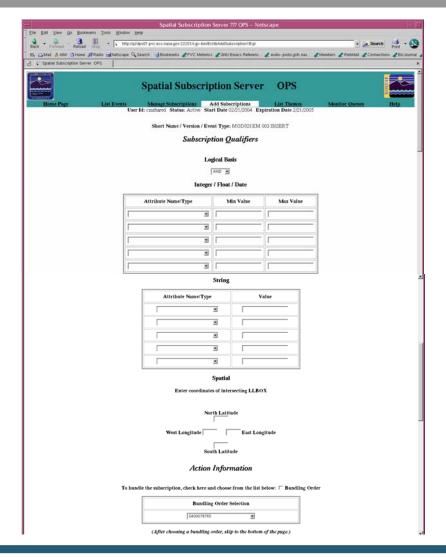
Spatial Subscription Server GUI List Events Page

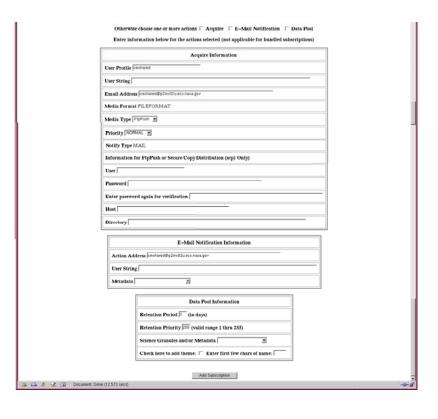


Spatial Subscription Server GUI Manage Subscriptions Page

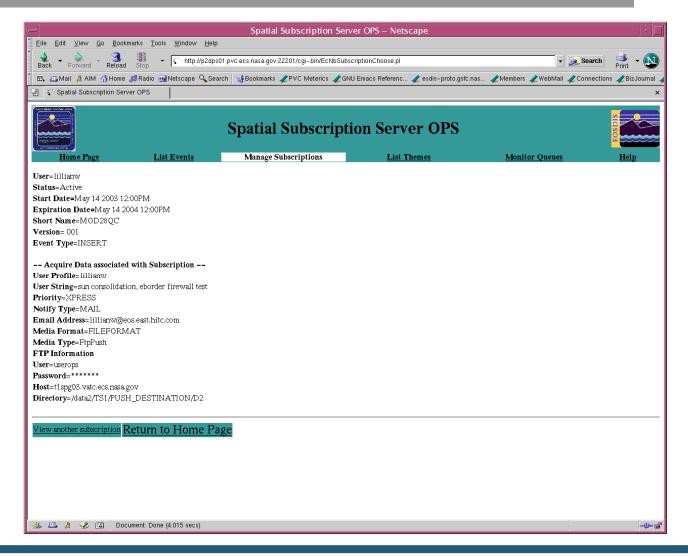


Spatial Subscription Server GUI Add Subscriptions Page

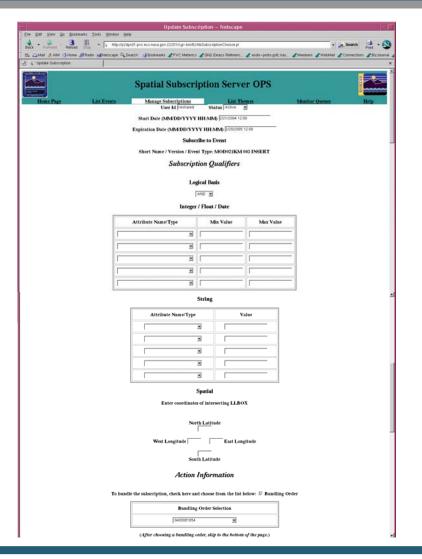


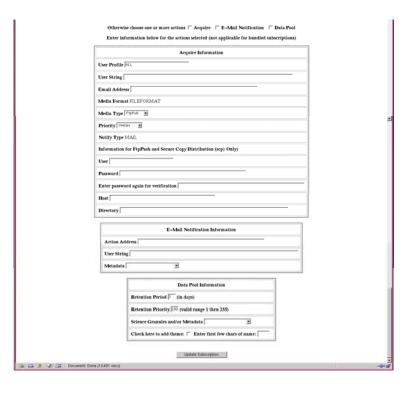


Spatial Subscription Server GUI View Subscriptions Page

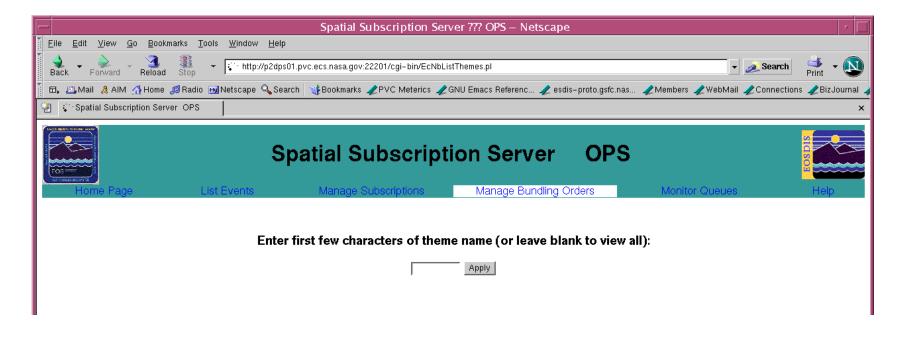


Spatial Subscription Server GUI Update Subscriptions Page

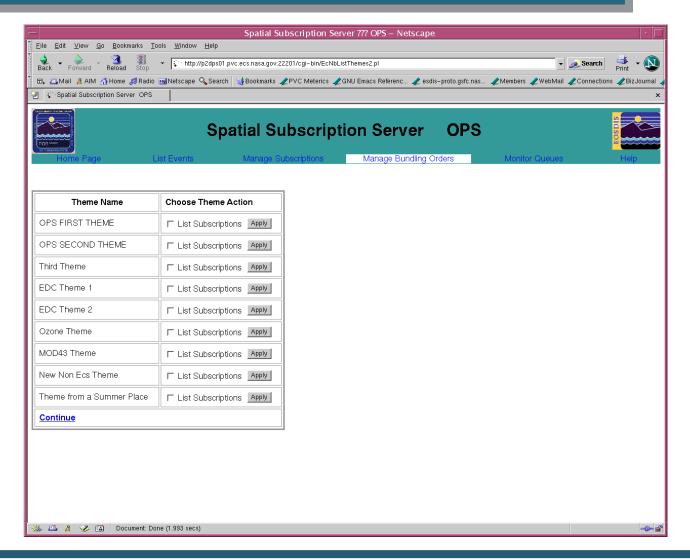




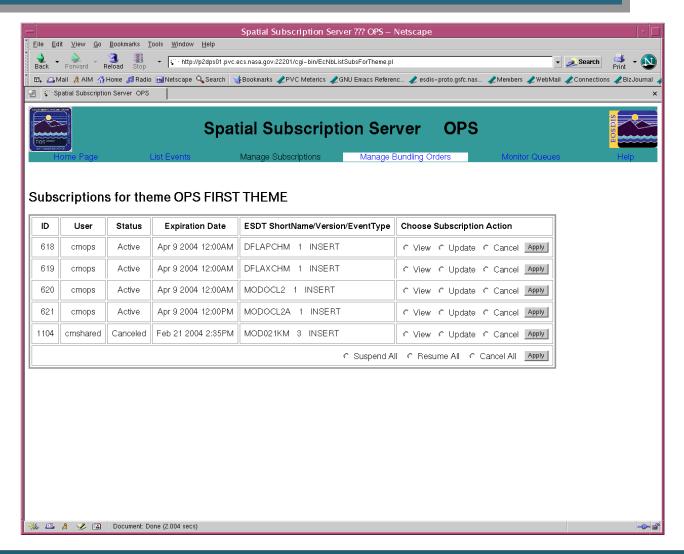
Spatial Subscription Server GUI List Themes Request Page



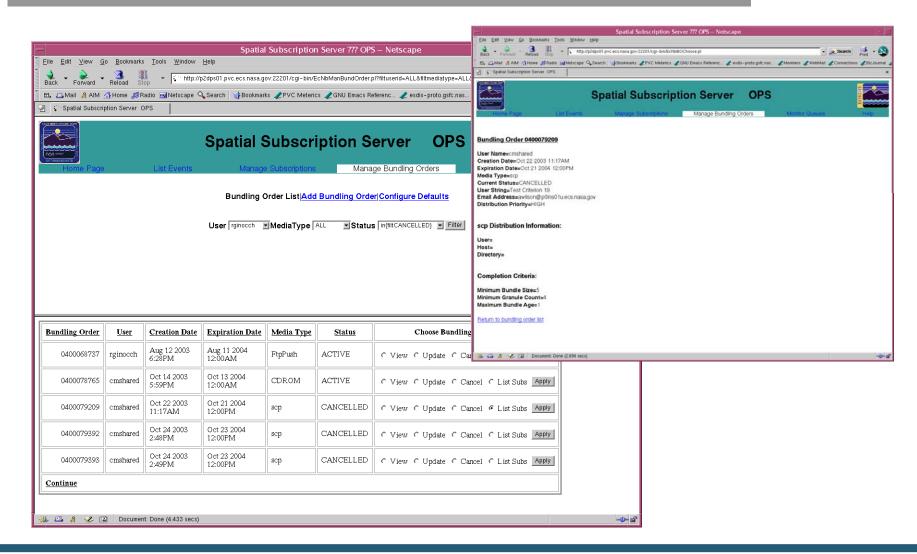
Spatial Subscription Server GUI Theme List Page



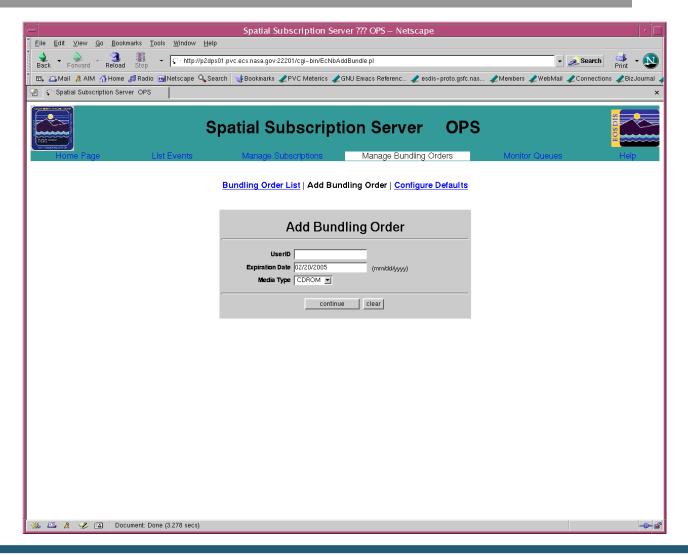
Spatial Subscription Server GUI List Subscriptions for Theme Page



Spatial Subscription Server GUI Manage Bundling Orders Page

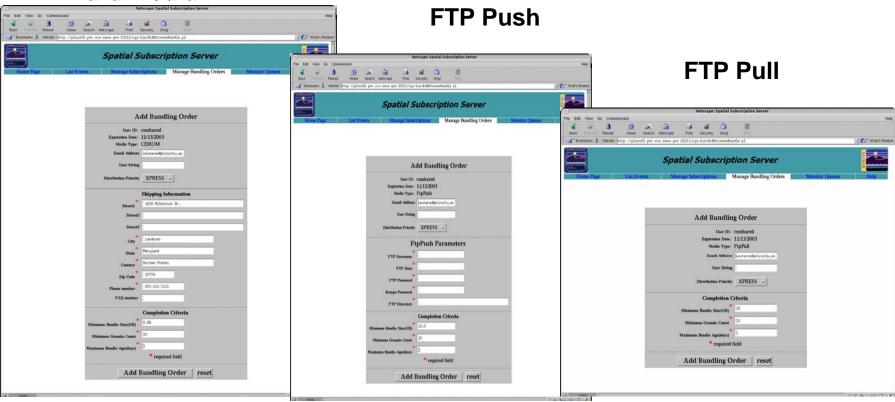


Spatial Subscription Server GUI Add Bundling Order Page



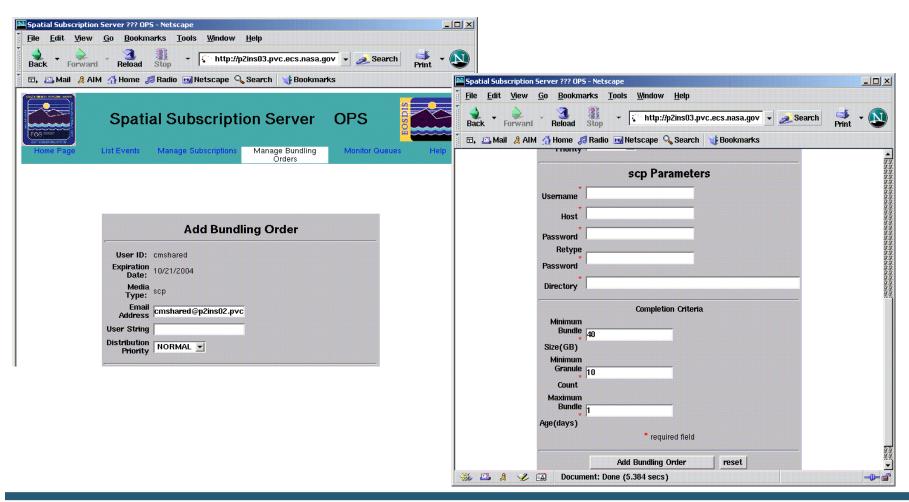
Spatial Subscription Server GUI Add Bundling Order: Data Pages

Hard Media

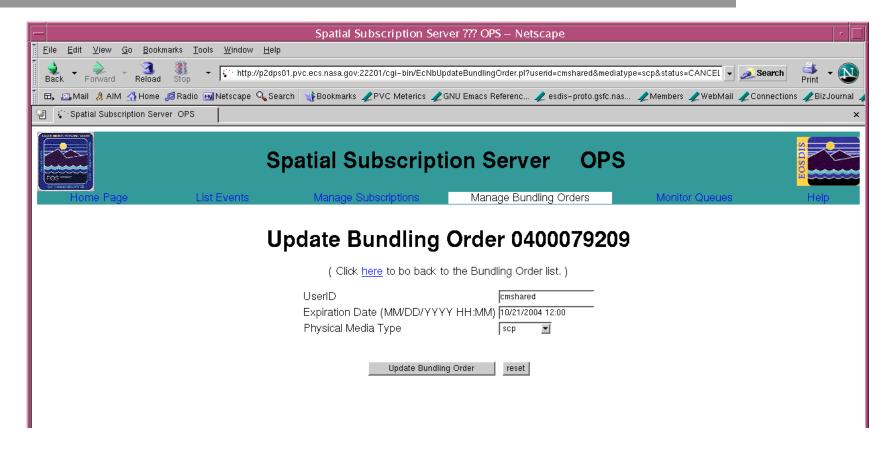


Spatial Subscription Server GUI Add Bundling Order: Data Pages

SCP

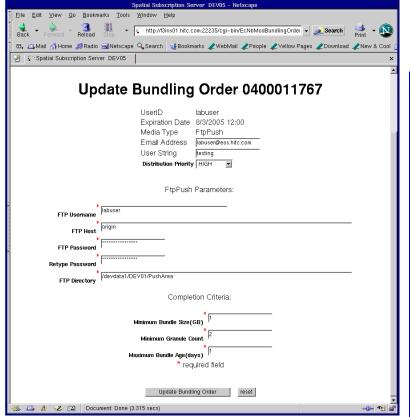


Spatial Subscription Server GUI Update Bundling Order Page

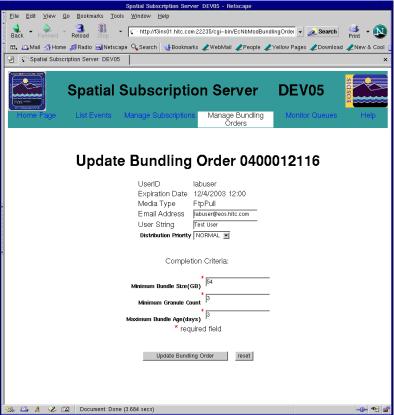


Spatial Subscription Server GUI Update Bundling Order: Data Pages

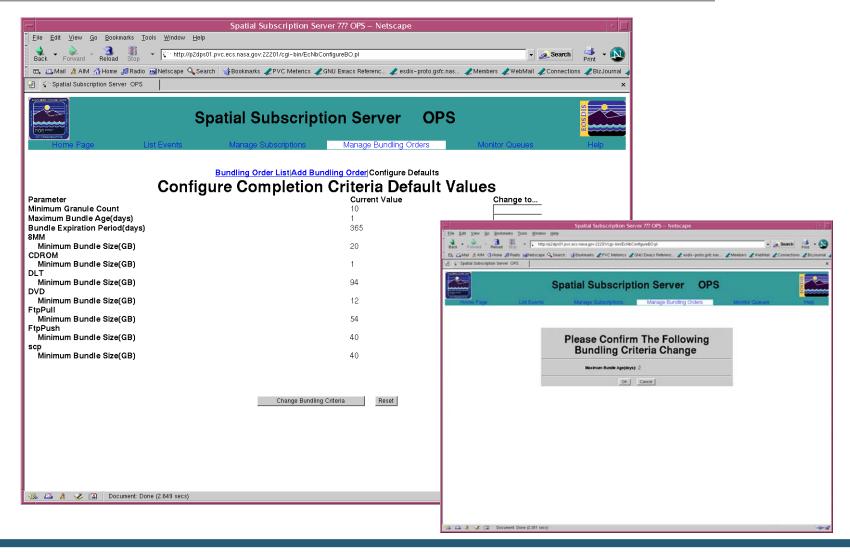
FTP Push



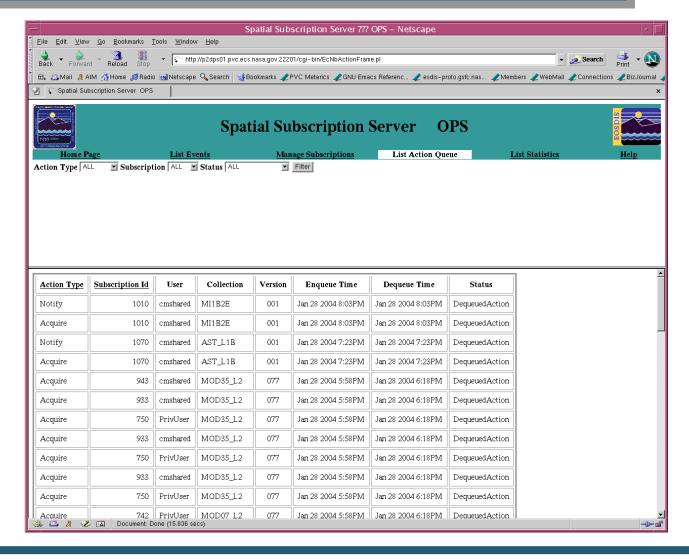
FTP Pull



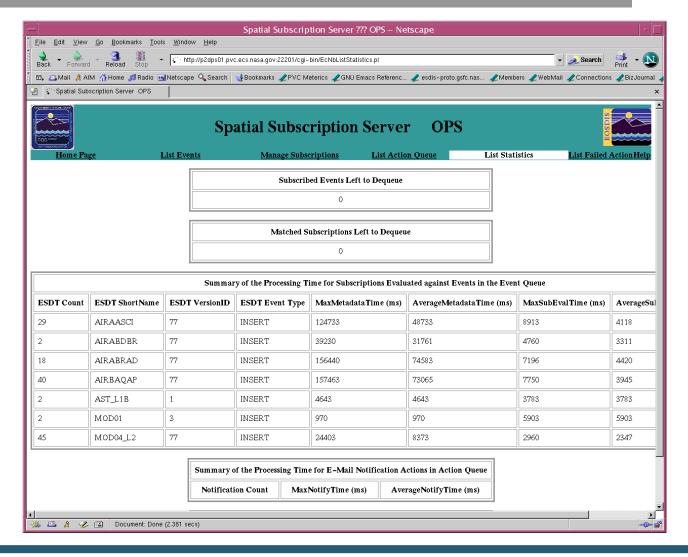
SSS GUI: Configure Bundling Order Completion Criteria Defaults



Spatial Subscription Server GUI List Action Queue Page



Spatial Subscription Server GUI List Statistics Page



Spatial Subscription Server GUI List Failed Action Page

